

REMARKS

Claims 1, 2 and 4-6 are pending. Claims 1 and 6 are rejected under 35 U.S.C. § 112 as failing to particularly point out and distinctly claim the subject matter which Applicants believe to be the invention. Claims 1, 2 and 4-6 are rejected under 35 U.S.C. § 103(a) as being unpatentable in view of Japanese patent 11-012684 (hereinafter “the ‘684 patent”). On August 28, 2006, Examiner Nicholas A. Smith and Chang Sik Kim, counsel for Applicants, participated in an Interview in which they discussed the alloy composition of claim 1 with respect to the ‘684 patent as well as the term “low yield ratio” with respect to the pending 103 and 112 rejections. The interview did not reach any agreement. On October 17, 2006, another examiner interview was conducted without causing an agreement.

Claim 6 is hereby canceled without prejudice to the prosecution of the subject matter in a subsequent application, thereby rendering the Examiner’s rejection of this claim moot. Claim 1 is hereby amended such that changes to claim 1 do not constitute new matter (see, *e.g.*, Examples B-1 (76%) and E-1 (88%) in Table 2). In view of the substance of the Examiner Interview and amendments to the claims submitted herewith, Applicants respectfully transverse the rejections and argue that the claims in their amended form are in condition for allowance.

The present invention relates to a steel pipe for use in construction of buildings, characterized in that the steel pipe contains, by mass, 0.01% to 0.20% C, 0.31% to 1.0% Si, 0.1% to 2.0% Mn, 0.001% to 0.05% Al, with a balance consisting of Fe and unavoidable impurities, and has a microstructure composed of ferrite and at least one of pearlite and cementite, and further has an average size of grains of the ferrite in the microstructure of being at least 25 μ m

and an average size of grain of one of the pearlite and the cementite being 4 to 20 μm . When a large external force, *e.g.* an earthquake, is applied to the pipes of the present invention, the columns of the pipes support the building despite being plastically deformed.

In contrast to the present invention, JP '684 relates to case hardening steel for cold forging capable of expediting spheroidizing treatment and excellent in cold forgeability. As described in paragraphs [0001] and [0002], a case hardening steel is generally used for the manufacture of machine components rather than for building support columns.

Furthermore, steel materials having larger resistant force ("yield strength") against a load are likely to fracture with little deformation when the load exceeding said resistant force is applied. As a result, the building supported by such steel pipe material is subject to collapse upon application of force. To prevent collapse, it is desirable for the steel materials to support the building by continuing the deformation thereof in order to attain tensile strength even when the force of the load applied exceeds the yield strength. As such, it is one object of the present invention to reduce the yield ratio (yield strength:tensile strength). Claim 1 discloses a steel pipe for use in the construction of buildings and "having a low yield ratio of 71% to 88%." The yield ratio is not only affected by the chemical composition of the alloy but also determined by the grain sizes as shown in Tables 1 and 2.

The present invention is not rendered obvious by the '684 patent. Specifically, claim 1 discloses a microstructure of the steel pipe that is composed of ferrite with an average grain size of *at least* 25 μm . Contrary to the Examiner's assertions in the Office Action mailed on August 8, 2005, Applicants have provided test data to support the critical nature of the claimed grain size (see, *e.g.*, Tables 2 and 4). In contrast, the average grain size of the ferrite used in the '684 patent is *less than* 40 μm . Nowhere in the '684 patent is there a suggestion to

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specify the size of the ferrite microstructure such that the larger size grains facilitate the development of an improved steel pipe according to the present invention. Indeed, there is no suggestion in the '684 patent that this characteristic should be targeted to be at least 25 μm in order to achieve improved performance of any sort. On the contrary, the '684 patent provides a limitation on the size of the ferrite grain and thus does not anticipate the present invention.

The microstructure in claim 1 also discloses at least one of pearlite and cementite, wherein the average grain size is 4 to 20 μm . The '684 patent requires pearlite to have the average grain size of <30. Although the presently claimed species falls within this broad genus, Table 2 clearly shows the unexpected result of present invention. For example, the comparative example H-1, which has a composition falls under the composition ranges of JP '684 and the average grain size of cementite or pearlite of 25, out of the claimed size but falls under JP '684, exhibits a high yield ratio even though its ferrite grain size falls under the range disclosed in JP '684.

Moreover, claim 1 is amended herein to provide for a steel pipe "consisting essentially of" the various constituents in the claimed weight percentages. Applicants contend that the inclusion of this limiting claim language necessarily places the present invention outside the scope of the cited prior art reference. Applicant further insists that the inclusion of test data in Tables 1-6 demonstrates that the weight percentage ranges claimed in the present invention are unique to its novel characteristics and that the introduction of additional steps or components would materially change the nature of Applicants' invention. *In re De Lajarte*, 337 F.2d 870 (C.C.P.A. 1964). For example, the comparative example J-1 shows that a relative large amount of V causes a high yield ratio.

For at least the foregoing reasons, independent claims 1 is not obvious over the
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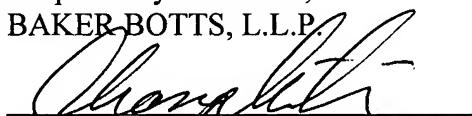
cited reference. Further dependent claims 2 and 4-5 are patentable for at least the same reason as claim 1.

CONCLUSION

This application is now believed to be in condition for allowance.

Reconsideration and prompt allowance of the claims are requested. If there are any remaining issues to be resolved, applicants respectfully request the Examiner to kindly contact the undersigned attorney by telephone for an interview. A request for extension of time and a fee for one month extension are enclosed. Should any additional fee be required, or if any overpayment has been made, the Commissioner is hereby authorized to charge any fees, or credit or any overpayments made, to Deposit Account 02-4377.

Respectfully submitted,
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